



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,229	06/05/2002	John Lionel Brauer	CULLP 0162US	8887
23908	7590	05/18/2004	EXAMINER	
RENNER OTTO BOISSELLE & SKLAR, LLP 1621 EUCLID AVENUE NINETEENTH FLOOR CLEVELAND, OH 44115			MCDONALD, RODNEY GLENN	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,229

Applicant(s)

BRAUER ET AL.

Examiner

Rodney G. McDonald

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12-21-01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 is unclear because "...wherein the negative electrode is provided with an irregular surface *provide an air spaces between...*" is unclear. Should it be "...wherein the negative electrode is provided with an irregular surface *providing* air spaces between..."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1753

Claims 1, 3, 4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slipiec et al. (U.S. Pat. 3,967,131).

Slipiec et al. teach a **corona** discharge apparatus. (Column 1 lines 5-10) In Figs. 1-3 an ozone generating unit 2 having three dielectric tube and electrode assemblies 3, 3' and 3" banded together in a common bundle and supported within a cylindrical casing 5 made of a suitable molded insulating material like polyvinyl chloride. (Column 4 lines 17-23) Each of the dielectric tube and electrode assemblies 3, 3' and 3" has the construction of the tube assembly 3, it being understood that the other assemblies 3' and 3" are identical thereto. The **dielectric tubes 15a, 15b and 15c** (**Compare to Applicant's dielectric sleeve**) to thereof preferably have axial lengths progressively decreasing from the outermost to the innermost tubes, so that if air is fed into the inlet thereof, it can progressively strike only one tube at a time, which minimizes the resistance to air flow into the tubes. On the inner surfaces of the cylindrical dielectric tubes 15a, 15b, and 15c, respectively, are **mesh electrodes 6a, 4b, and 6b** (**Compare to Applicant's required positive and negative electrodes**) of smaller mesh than the relatively rigid mesh **electrode sleeve 4a** (**Compare to Applicant's required outer positive electrode**) supported on the outer surface of the outermost dielectric tube 15a. (Column 4 lines 43-57) (**Compare to Applicant's required co-axial electrodes and dielectric sleeve**)

The rigid cylindrical mesh electrode 4a is frictionally fitted over the outermost cylindrical dielectric tube. (Column 5 lines 32-35) (**Compare to Applicant's required interference fit**)

The ***spacer means (Compare to Applicant's required spacer means for creating the air gap)*** for uniformly separating the cylindrical dielectric tubes most desirably do not materially interfere with air flow so as to cause uneven electrode cooling. (Column 5 lines 48-51) A space means meeting all of the requirements is oxidation resistant is ***flexible tubing 21*** made of poly vinyl chloride. (Column 5 lines 64-66)

Also, because of the ozone generating unit construction just described, there are sufficient air gaps formed by the spacing between the dielectric tubes 15a, 15b and 15c and the wire mesh electrode pairs 6a-4b and 4b-6b, in which air gaps corona discharges are produced and through which the air to be ozonized flows. A corona discharge is also produced between the wire mesh electrodes 4a and 6b, even though these are spaced by the thickness of the outer dielectric tube 15a, which corona is located in the spaces between the wires forming the mesh of these electrodes. (Column 6 lines 13-25)

The wire mesh electrodes 4a and 4b are respectively connected to the high voltage terminal 8 while the intervening wire mesh electrodes 6a and 6b are connected to the high voltage terminal 8'. The latter interconnections are effected by unique connector leads. (Column 6 lines 35-38)

The difference between Slipiec et al. and the present claims is that the negative and positive polarities of the electrodes are not discussed, the air spaces between the outermost portion of the negative electrode and the dielectric sleeve is not discussed and the spacers being O-rings is not discussed.

As to the polarities of the electrodes the electrodes must be alternating positively and negative to generate discharge between them. Outer electrode 4a could be positive to generate a voltage across the electrodes of 12,000 Volts. (Column 7 lines 65-66)

As to the air spaces between the outermost portion of the negative electrode and the dielectric sleeve since the electrodes are meshed air spaces exist between the outermost portion of the negative electrode and the dielectric sleeve. (See electrodes discussed above)

From Figs. 6 and 7 the space is in the shape of an O-ring. (See Figs. 6 and 7)
(Compare to Applicant's required resilient O-rings)

The motivation for providing a corona discharge apparatus with interference fitting electrodes is that it allows for producing ozone. (Column 1 lines 5-10)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Slipiec et al. by utilizing the negative and positive polarities of the electrodes, the air spaces between the outermost portion of the negative electrode and the dielectric sleeve and the spacers being O-rings as taught by Slipiec et al. because it allows for producing ozone.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slipiec et al. as applied to claims 1, 3, 4 and 6-8 above, and further in view of Waltonen (U.S. Pat. 4,966,666).

The difference not yet discussed is the threaded metal rod.

Waltonen teach in Fig. 1 an electrode 101 provided with a threaded extension.
(See Fig. 1; Column 2 lines 14-15)

The motivation for utilizing thread electrodes is that it allows for securing the module by nuts. (Column 2 lines 29-30)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a threaded electrode as taught by Waltonen because it allows for securing the module by nuts.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slipiec et al. as applied to claims 1, 3, 4 and 6-8 above, and further in view of Crosbie (U.S. Pat. 6,165,423)

The difference not yet discussed is the means to move the air.

Crosbie teach an ozone generator utilizing corona discharge that utilizes a fan 66. (Column 4 lines 3-6)

The motivation for utilizing a means to move the air is that it is desired to provide adequate air flow to the ozone generator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a means to move air as taught by Crosbie because it allows for provided adequate air flow to the ozone generator.

Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slipiec et al. as applied to claims 1, 3, 4 and 6-8 above, and further in view of Gelbman (U.S. Pat. 4,603,031) and Wood (U.S. Pat. 882,509).

The differences not yet discussed are the threaded electrode, the flow of air exiting the inner electrode and the flow diverters.

Gelbman teaches an inner electrode with perforations for allowing air to enter the apparatus. (Column 2 lines 45-46) The air is directed to flow between a gap between the dielectric and the electrode. (See Fig. 2)

The motivation for providing for flow of air exiting the air gap is that it allows for production of ozone at uniform concentrations. (Column 1 lines 62-65)

Wood teaches utilizing blocks 26 to effect the discharge of electricity such that it is uniform. (See Fig. 1; Page 2 lines 46; Page 2 lines 63-95) Wood also teaches that the inner electrode must be threaded to cooperate with threaded component 6 of Fig. 11. (See Fig. 11)

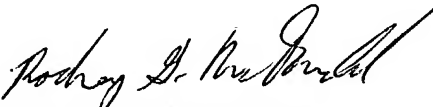
The motivation for providing blocks is that it allows for producing uniform electric discharge. (Page 2 lines 3-95) The motivation for providing a thread inner electrode is that it allows for cooperating with electrical connector. (See Fig. 11)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Slipiec et al. utilizing the flow of air exiting the inner electrode as taught by Gelbman and to have utilized a threaded electrode and flow diverters as taught by Wood because it allows for producing uniform electric discharge and connecting to the electrical connector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
May 12, 2004